

基于光束平差法的像机内参数虚拟立体校准方法

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摘要 为解决摄像机内参数的精确校准问题,对基于光束平差法的像机内参数虚拟立体校准方法进行了研究。通过对摄像机成像过程中各种畸变因素的分析,建立一个更加全面的校准模型;建立了关于校准参数的共线性方程,并对其进行线性化。构建基于Gauss Markov原理的误差模型,实现对像机参数的优化求解。利用红外发光二极管随坐标测量机测头在校准空间内作定间距移动构成虚拟立体校准模板,保证了高精度校准控制点的获取。校准试验表明,该方法切实可行,能够解决视觉测量时摄像机内参数精确校准问题。

关键词 [仪器仪表技术](#), [视觉坐标测量](#), [摄像机校准](#), [畸变修正](#), [光束平差](#)

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Dummy solid calibration method of camera intrinsic parameters using bundle adjustment algorithm

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Abstract To solve the precise calibration of the camera intrinsic parameters,a dummy solid calibration method using the beam collimation algorithm was proposed.A comprehensive calibration model was established through the analysis of the distortion factors in the camera imaging process.A collinearity equation of the calibration parameters was derived and linearized.An error model based on Gauss Markov principle was built to solve the optimization problem of camera parameters. A dummy solid calibration template was formed by an infrared LED moving with constant interval with the probe of the coordinates measurement machine,and the precise calibration control points were acquired.The validating calibration test was performed and its result indicates that the method is viable,and can solve the precise calibration of camera intrinsic parameters in the vision coordinates measurement system.

Key words [technology of instrument and meter](#) [vision coordinates measurement](#) [camera calibration](#) [distortion correction](#) [beam collimation](#)

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